

Bellwork: 5/1/13

Simplify each expression:

1)  $\frac{\sqrt[3]{144x^{12}y^7z^3}}{\sqrt[3]{3x^5yz^3}}$

$$\sqrt[3]{48x^7y^6}$$

$$2x^2y^2\sqrt[3]{6x}$$

2)  $(4 - 2\sqrt{3})(3 + 5\sqrt{3})$

$$12 + 20\sqrt{3} - 6\sqrt{3} - 10\sqrt{9}$$

-30

$$-18 + 14\sqrt{3}$$

33)  $\sqrt{\frac{162a}{6a^3}} = \sqrt{\frac{27}{a^2}} = \frac{\sqrt{27}}{\sqrt{a^2}}$

$$\begin{array}{c} 27 \\ \wedge \\ 9 \cdot 3 \\ \wedge \\ 3 \cdot 3 \end{array}$$

$$\frac{3\sqrt{3}}{a}$$

$$\frac{3}{a}\sqrt{3}$$

29]  $\frac{\sqrt[3]{4x^2}}{\sqrt[3]{x}} = \sqrt[3]{4x}$

26]  $\frac{\sqrt{63xy^3}}{\sqrt{7y}} = \sqrt{9xy^2} =$   
 $3y\sqrt{x}$

27

$$\frac{\sqrt{54x^5y^3}}{\sqrt{2x^2y}} = \sqrt[2]{27x^3y^2} =$$

$$3xy\sqrt{3x}$$

Section : 6.3 Cont...

Obj: To divide radical expressions with conjugates

Dividing Radicals:

\*\*\* You should never have a radical in the denominator!\*\*\*

Step 1: multiply the denominator by either just the root or conjugate

Step 2: whatever you do to bottom, do to top.

Step 3: write top/bottom + see if can reduce.

$$1.) \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{\sqrt{9}}$$
$$\boxed{\frac{\sqrt{3}}{3}}$$

$$2.) \frac{2}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{2\sqrt{6}}{\sqrt{36}}$$
$$\frac{2\sqrt{6}}{6} = \boxed{\frac{1\sqrt{6}}{3} \text{ or } \frac{\sqrt{6}}{3}}$$

$$3.) \frac{2}{(1+\sqrt{3})(1-\sqrt{3})} = \frac{2(1-\sqrt{3})}{-2}$$

Bottom:

$$\frac{-1(1-\sqrt{3})}{(1+\sqrt{3})(1-\sqrt{3})}$$

$$\frac{-1(1-\sqrt{3})}{1-\sqrt{3}+\sqrt{3}-\sqrt{9}}$$

$$\frac{-1(1-\sqrt{3})}{1-3}$$

$$\frac{-1(1-\sqrt{3})}{-2}$$

$$\frac{1-\sqrt{3}}{2}$$

You try:

$$5.) \frac{3}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{3\sqrt{7}}{\sqrt{49}} = \frac{3\sqrt{7}}{7}$$

$$4.) \frac{4}{(3-\sqrt{7})(3+\sqrt{7})} = \frac{4(3+\sqrt{7})}{2}$$

Bottom:

$$\frac{4(3+\sqrt{7})}{(3-\sqrt{7})(3+\sqrt{7})}$$

$$\frac{4(3+\sqrt{7})}{9+3\sqrt{7}-3\sqrt{7}-\sqrt{49}}$$

$$\frac{4(3+\sqrt{7})}{9-7}$$

$$\frac{4(3+\sqrt{7})}{2}$$

$$2(3+\sqrt{7})$$

$$6+2\sqrt{7}$$

$$6.) \frac{3}{2-3\sqrt{2}} \cdot \frac{(2+3\sqrt{2})}{(2+3\sqrt{2})} = \frac{3(2+3\sqrt{2})}{-14}$$

Bottom:

$$\frac{3(2+3\sqrt{2})}{(2-3\sqrt{2})(2+3\sqrt{2})}$$

$$\frac{3(2+3\sqrt{2})}{4+6\sqrt{2}-6\sqrt{2}-9 \cdot 2}$$

$$\frac{3(2+3\sqrt{2})}{4-18}$$

$$\frac{3(2+3\sqrt{2})}{-14}$$

$$\frac{6+9\sqrt{2}}{-14}$$

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$$\textcircled{11} \frac{(2-\sqrt{3})(-2+\sqrt{5})}{(-2-\sqrt{5})(-2+\sqrt{5})} = \frac{-4+2\sqrt{5}+2\sqrt{3}-\sqrt{15}}{-1}$$

Bottom:

$$(-2-\sqrt{5})(-2+\sqrt{5})$$

$$4-2\sqrt{5}+2\sqrt{5}-\sqrt{25}$$

$$4-5$$

$$-1$$

Top:

$$(2-\sqrt{3})(-2+\sqrt{5})$$

$$-4+2\sqrt{5}+2\sqrt{3}-\sqrt{15}$$

